Depression and anxiety in migrants in the Netherlands

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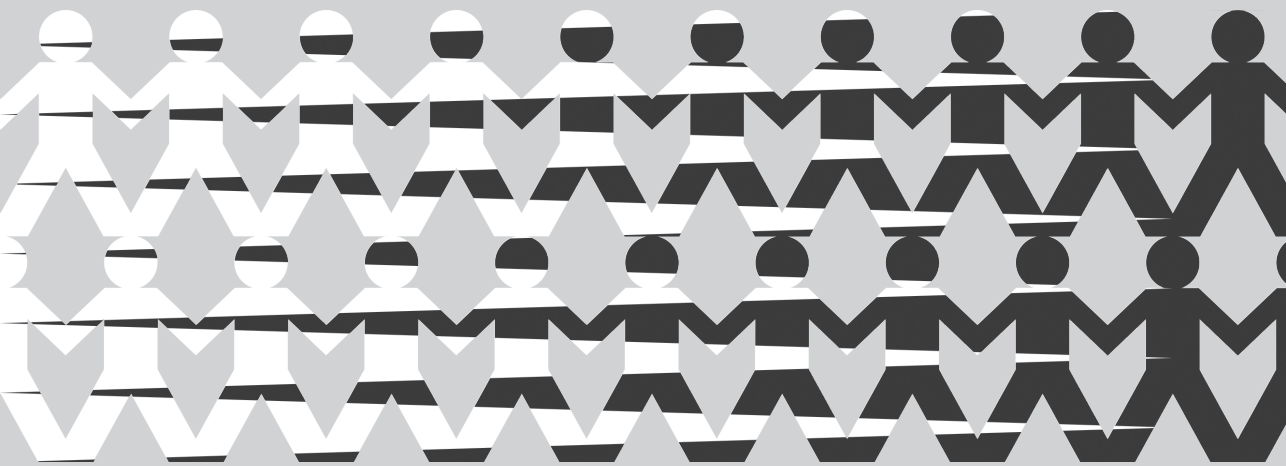
Chapter 7

Ethnic density and psychological distress

Ethnic density is not associated with psychological distress in immigrant groups in the Netherlands



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ABSTRACT

Background

Ethnic density, the proportion of people of the same ethnic group in the neighbourhood, has been proposed as a protective factor with regard to mental health in ethnic minorities. Exploring putative effects of ethnic density may both help further elucidating the etiology of mental illness and uncover potential fruitful areas for prevention.

Methods

Using multi-level linear regression modeling, this study examines the influence of ethnic density at neighbourhood level on psychological distress, measured with the Kessler Psychological Distress scale (K10), in 13 864 native Dutch, 1206 Surinamese-Dutch, 978 Turkish-Dutch and 784 Moroccan-Dutch citizens of the four major cities in the Netherlands.

Results

At the individual level, gender, marital status, educational level and financial situation were associated with psychological distress in all ethnic groups. At the neighbourhood level, the percentage of households with an income under poverty threshold was associated with more psychological distress, but only in native Dutch. After controlling for individual and neighbourhood level demographic and socioeconomic characteristics, ethnic density was not associated with psychological distress in any of the minority or native groups.

Conclusion

Individual demographic and socioeconomic risk characteristics outweigh the influence of neighbourhood attributes on psychological well-being. Acknowledging the limitations of cross-sectional observational research, the data suggest that policy efforts to improve mental health in the community should give priority to enhancing the socioeconomic situation of the neighbourhood's residents rather than focusing on the ethnic composition of the neighbourhood.

INTRODUCTION

A number of studies have suggested that mental health outcomes in ethnic minority individuals improve when they live in neighbourhoods where they constitute a substantial proportion of the population [1,2]. This protective 'ethnic density effect' (ED effect) on mental health is counter-intuitive, as local areas with high proportions of minority ethnic residents are often characterized by deprivation [3]. In contrast, in many European countries nowadays the spatial concentration of migrants is regarded as a policy problem. Supposedly it hampers the socio-cultural integration of the ethnic minorities and breaches the feelings of social cohesion of citizens with a native ethnic background [4, 5]. However, evidence on the link between area ethnic composition and psychological wellbeing of the residents remains scant and yields contradictory results.

The first studies on the impact of ED on mental health focused on the incidence of psychotic disorders. For blacks in the UK, incidence rates of psychosis decreased as the percentage of blacks in their neighbourhood increased in most, but not all studies [2]. In the same line, immigrants from Surinam, Turkey and Morocco in the Netherlands showed a higher incidence of psychotic disorders compared to native Dutch in low-ethnic-density neighbourhoods, but not in high-ethnic-density neighbourhoods [6]. ED effects on common mental disorders in adults have been assessed in population studies in Canada, the USA and the UK. The majority of these analysis had results that support neutral or protective ED effects [2]. However, some studies concluded that significant protective ED effects were found, but that they were relatively unimportant in determining levels of mental health [7,8].

These studies varied in several important methodological aspects, like sample size, size of the neighbourhoods, the level and range of ethnic density, choice of socioeconomic factors on individual and neighbourhood level and statistical methods, which makes it difficult to draw general conclusions on presence of absence of an ED effect. The ethnic and race groups vary per country, as does the degree of deprivation of the minority groups compared to the native population. A prerequisite for a supposed protective ED effect is ethnic identity [9]. Only if neighbourhood residents identify themselves with their ethnic group, they will preferentially offer or receive support from neighbourhood members with the same ethnic background. If they have a weak or negative ethnic identity, a protective ED effect is not likely to occur.

The socio-demographic situation in the Netherlands offers an outstanding possibility to investigate whether a protective ED effect occurs in three ethnic minority groups with varying levels of ethnic identity, but only moderate levels of deprivation. Turkish and Moroccan young men immigrated as labour workers halfway the sixties of the previous century, and later on settled permanently with their families in the Netherlands. The immigrants from Surinam, a country in South America, which was formerly a part of the Netherlands, moved with their families to the Netherlands in the 1970's when the political and economic situation in their country deteriorated after becoming independent. The Netherlands government has a longstanding policy of social-democracy, resulting in a relatively even distribution of wealth. Still the socioeconomic position of the three main immigrant groups lags behind the level reached by native Dutch citizens [5]. At the same

time, differences emerge in the ethnic identity of the three groups. In a national survey, 49% of Turkish-Dutch respondents identified themselves more with Turkish people than with Dutch people, followed by 40% of the Moroccan-Dutch and 25% of the Surinamese-Dutch respondents [10]. In a study on interethnic contacts Turkish-Dutch, Moroccan-Dutch and Surinamese-Dutch people reported to have much contact with people from their own ethnic background in 70%, 61% and 38% of cases respectively [11]. From these indicators we conclude that ethnic identity is strongest in Turkish-Dutch, followed by Moroccan-Dutch, and lowest in Surinamese-Dutch.

We investigated the association of ED and psychological distress in the four major cities of the Netherlands and hypothesized that a protective ED effect would occur most strongly in Turkish-Dutch, followed by Moroccan-Dutch and Surinamese-Dutch ethnic minorities. We examined the association of ethnic density with psychological distress for each ethnic group separately, adjusting for individual and neighbourhood socioeconomic factors.

METHODS

Individual-level data

We used data from a cross-sectional community survey of adults (aged 16+) in the four major cities of the Netherlands, undertaken in 2008, the 'G4 Monitor 2008'. The survey was initiated by the municipal health services of Amsterdam, Rotterdam, The Hague and Utrecht with the goal to describe and compare the physical and mental health status and its determinants of the citizens of the four cities. The necessity for ethical approval for the study was waved by the ethical commission of the Amsterdam University Medical Center. The G4 Monitor was based on a random sample of 42,686 adults from the municipal population register, stratified by borough and age, who were invited by mail to complete a written or digital questionnaire in Dutch or Turkish language. Extensive effort was made to urge citizens of minority groups to respond to the survey: non-responders received follow-up letters, phone-calls and house-visits and were offered personal help to fill in the questionnaire. The overall response was 48.9%, with higher response rates in women, elder persons, native Dutch citizens and residents of deprived neighbourhoods.

We restricted our analyses to respondents from the three main immigrant groups from Surinam, Turkey and Morocco, and native Dutch respondents (sample n=17,177). After exclusion of respondents with missing values on demographic characteristics, psychological distress level, neighbourhood assignment or ethnic density in the neighbourhood (together 2.0%) the final sample for analysis was n=16,832.

Psychological distress, the outcome measure in this study, was assessed using the Kessler Psychological Distress scale (K10), of which an official Dutch version is available [12-14]. The K10 is a screening instrument for depressive and anxiety disorders in general population samples and is not biased with respect to gender and educational level. In relation to ethnic background the Dutch K10 showed only minor differential item bias [13].

Individual demographic and socioeconomic characteristics were included in the survey. Ethnicity was defined as Surinamese-Dutch, Turkish-Dutch or Moroccan-Dutch by country of birth (first-

generation immigrants) or country of birth of one or both parents (second-generation immigrants). Respondents who are Dutch-born and whose parents were both born in the Netherlands were considered native Dutch subjects [15]. Respondents were asked about their marital status, highest educational qualification (in 8 categories) and financial situation ('Did you have financial trouble managing your household during the last year?').

Neighbourhood-level data

The four cities consist in total of 402 neighbourhoods, of which 29 were non-populated industrial zones or had missing values on socioeconomic characteristics. A further 17 neighbourhoods were dropped because no respondents were included from these neighbourhoods. The 356 included neighbourhoods had a mean (SD) population size of 5,853 (4,681) inhabitants, range 30 - 26,960.

All neighbourhood-level measures were provided by Statistics Netherlands [16] and matched to anonymous respondent records. Statistics Netherlands is a legal agency responsible for publishing statistics to be used by policy-makers and for scientific research, based on administrative registrations of both government and government-funded organizations. Ethnic density, the main predictor variable, was defined as the percentage of residents of each of the four ethnic groups in the neighbourhood: percent native Dutch, Surinamese-Dutch, Turkish-Dutch or Moroccan-Dutch citizens. This information, based on he municipal registrations and processed by Statistics Netherlands, is fairly reliable. For example, investigation of the accuracy of the population register of Amsterdam revealed that between 7.5 and 15% of its residential information is outdated or incorrect [17].

Two indicators of neighbourhood SES were included. First, the percentage of households in the neighbourhood with an income under the national minimum poverty threshold [18]. Second, the average house value in the neighbourhood. The house values, privately owned and rented houses alike, are two-yearly assessed by the municipality according to the Act on Property Assessment (WOZ).

Statistical methods

We conducted separate analyses for the native Dutch group and each of the three immigrant groups. Sample characteristics were described using means and percentages. For the bar chart, ethnic density was transformed into units of 10% increase. The effects of ethnic density on psychological distress as measured by the K10 were investigated using multi-level modeling with the statistical software MLwiN. As the distribution of the K10 sum scores were positively skewed, the analyses were performed with log-transformed K10 scores. We started with the analysis of null random intercept models examining the extent to which there were between neighborhood differences in the mean K10 score. This confirmed significant between-neighbourhood variation in the native Dutch study group (change in fit of model chi-sq 47.2; df = 1, $p < .000001$), although the proportion of variance explained by the neighbourhood level was small (ICC 1.3%). In the three ethnic minority groups the change in fit of the model after adding the neighbourhood level was non-significant. The findings in the Dutch study group prompted the need for multi-level analysis. The four models presented in the results aimed to test the unique contribution of ethnic density to psychological distress. We started again with the null model (model 1) and included successively individual demographic and socioeconomic characteristics (model 2), neigbourhood socioeconomic characteristics (model 3) and finally ethnic density (model 4).

RESULTS

The individual and neighbourhood characteristics of the sample are described in Table 1. In general the Turkish and Moroccan immigrants reported less educational qualifications and more financial troubles then the native Dutch group, while the Surinamese-Dutch group took a middle position. Highly segregated neighbourhoods are common for native Dutch residents (mean ED 61.5%), but ethnic minorities live in neighbourhoods with low or moderate ethnic density. Figure 1 shows the mean K10 scores by ethnic density, stratified by ethnic groups. No clear patterns were observed, although a small downward trend in K10 scores (less psychological distress) with increasing ED is suggested among the Dutch and Turkish-Dutch respondents. This points either to the absence of an ED effect, or to the presence of a protective ED effect which is counterbalanced by the effects of neighbourhood deprivation.

Table 1 | Individual and neighborhood characteristics

	Total sample (n=16 832)	**Native Dutch respondents** (n=13 864)	**Surinamese-Dutch respondents** (n= 1 206)	**Turkish-Dutch respondents** (n=978)	**Moroccan-Dutch respondents** (n=784)
Individual level					
Age (years (sd))	49.5 (20.4)	51.4 (20.5)	44.4 (18.3)	37.9 (15.7)	38.1 (16.7)
Gender (% female)	56.6	56.8	61.7	50.9	53.8
Marital status (% married/cohabitating)	56.6	57.1	39.1	65.1	64.7
Educational level (% none or primary)	16.4	12.9	18.7	42.0	44.4
Financial troubles (% yes)	25.4	20.4	44.4	57.7	46.8
K10 score (mean (sd))	17.2 (7.1)	16.6 (6.4)	18.5 (8.4)	22.6 (9.6)	20.5 (8.8)
Neighbourhood level					
% native Dutch (sd)	57.8 (19.4)	61.5 (17.4)	43.7 (19.9)	38.1 (18.8)	40.3 (19.4)
% Surinamese-Dutch sd)	7.2 (6.2)	6.4 (5.6)	12.8 (8.6)	10.8 (6.2)	8.7 (5.5)
% Turkish-Dutch (sd)	6.0 (6.7)	4.7 (5.3)	9.6 (9.0)	14.4 (9.3)	12.1 (7.6)
% Moroccan-Dutch (sd)	7.7 (8.4)	6.6 (7.6)	9.6 (8.1)	13.9 (9.3)	17.0 (10.5)
% households with income under poverty threshold (sd)	12.1 (6.1)	11.2 (5.6)	15.7 (6.5)	17.3 (6.0)	17.0 (5.7)
Property value (euro (sd))	201.9 (85.6)	210.9 (88.3)	167.4 (64.4)	151.1 (48.9)	159.0 (43.9)

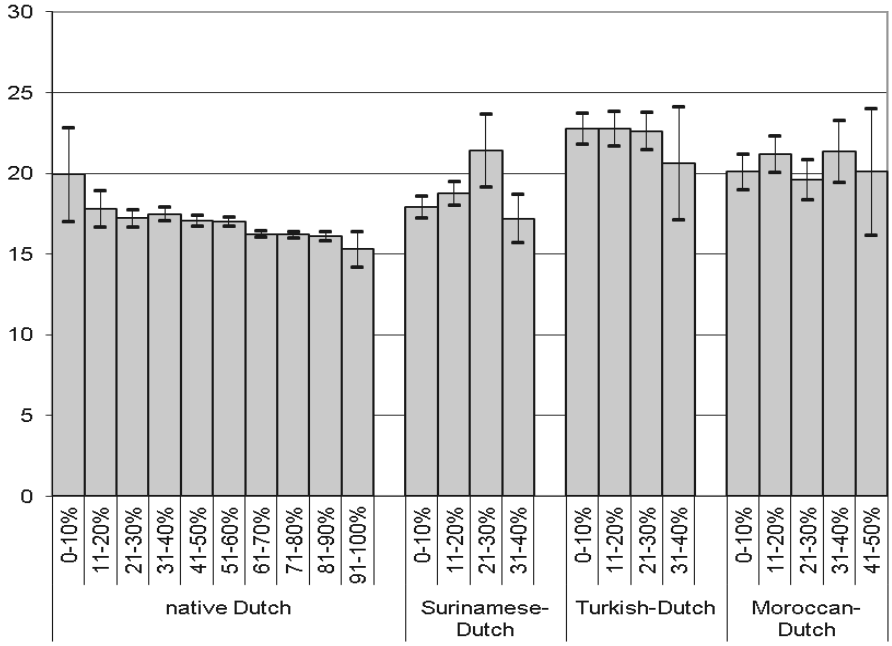

Figure 1 | Psychological distress level (mean (95% SD) K10 score) by percentage of residents in the neighbourhood with the same ethnicity. (X-as: ethnic density, Y-as: K10 score)

Table 2 reports for each ethnic group the mean differences in log-transformed K10 scores associated with inclusion of all successive variables and the model fit parameters of the four multi-level linear regression models. Across all four ethnic groups women, single living persons, less educated people and persons facing financial troubles experience more psychological distress (higher K10 scores). In contrast to these individual characteristics, neighbourhood socioeconomic indicators are not significantly associated with the K10, with only one exception in the native Dutch group: native Dutch respondents living in neighbourhoods with a high percentage of households with an income under poverty threshold reported more psychological distress. After adjusting for all confounders there was no evidence in the native Dutch or any of the three ethnic minority groups of an association of ethnic density with psychological distress.

Table 2 | Multi-level linear regression models predicting psychological distress (K10 score) by ethnic group.

	Model 1	Model 2 Mean difference[a]	(SE)		Model 3 Mean Difference[a]	(SE)		Model 4 Mean Difference[a]	(SE)	
NATIVE DUTCH RESPONDENTS										
Individual level										
Age (cont.)		0.00030	(0.00016)		0.00029	(0.00016)		0.00026	(0.00016)	
Gender: female		0.091	(0.0056)	***	0.091	(0.0057)	***	0.091	(0.0057)	***
Marital status: Not married/cohabitating		0.078	(0.0057)	***	0.076	(0.0058)	***	0.076	(0.0058)	***
Educational level (cont.)		– 0.013	(0.0015)	***	– 0.012	(0.0016)	***	– 0.012	(0.0016)	***
Financial troubles: Yes		0.18	(0.0070)	***	0.18	(0.0071)	***	0.18	(0.0071)	***
Neighbourhood level										
Income under poverty level (% of households)					0.0013	(0.00062)	*	0.00068	(0.00081)	
Mean Property value (euro)					– 0.00003	(0.00004)		– 0.0003	(0.00004)	
Ethnic density (%)								– 0.0042	(0.0026)	
Model fit										
Likelihood	9186.4	7055.6			7010.2			7007.6		
Change in fit of model		2130.8			45.4			2.5		
Degrees of freedom		5			2			1		
Significance of change		<.000001			<.000001			.11		
SURINAMESE– DUTCH RESPONDENTS										
Individual level										
Age (cont.)		– 0.00050	(0.00066)		– 0.00034	(0.00068)		– 0.00034	(0.00068)	
Gender: female		0.12	(0.023)	***	0.13	(0.023)	***	0.13	(0.023)	***
Marital status: Not married/cohabitating		0.084	(0.023)	***	0.084	(0.023)	***	0.083	(0.023)	***
Educational level (cont.)		– 0.038	(0.0064)	***	– 0.036	(0.0066)	***	– 0.036	(0.0066)	***
Financial troubles: Yes		0.24	(0.023)	***	0.23	(0.023)	***	0.23	(0.023)	***
Neighbourhood level										
Income under poverty level (% of households)					– 0.00087	(0.0022)		– 0.00072	(0.0023)	
Mean Property value (euro)					– 0.00025	(0.00023)		– 0.00026	(0.00023)	
Ethnic density (%)								– 0.0040	(0.016)	
Model fit										
Likelihood	1236.2	933.8			932.4			932.4		
Change in fit of model		302.4			1.4			0.04		
Degrees of freedom		5			2			1		
Significance of change		<.000001			.51			.84		

TURKISH– DUTCH RESPONDENTS				
Individual level				
Age (cont.)		0.0036 (0.00097) ***	0.0037 (0.00099) ***	0.0037 (0.0010) ***
Gender: female		0.14 (0.026) ***	0.14 (0.026) ***	0.14 (0.026) ***
Marital status: Not married/cohabitating		0.038 (0.029)	0.038 (0.029)	0.040 (0.029)
Educational level (cont.)		– 0.0068 (0.0078)	– 0.0067 (0.0078)	– 0.0063 (0.0080)
Financial troubles: Yes		0.29 (0.026) ***	0.29 (0.027) ***	0.29 (0.027) ***
Neighbourhood level				
Income under poverty level (% of households)			– 0.0015 (0.0027)	– 0.0022 (0.0030)
Mean Property value (euro)			0.00027 (0.00037)	– 0.00023 (0.00037)
Ethnic density (%)				0.0089 (0.019)
Model fit				
Likelihood	1072.5	800.2	799.6	799.4
Change in fit of model		272.3	0.5	0.2
Degrees of freedom		5	2	1
Significance of change		<.000001	.77	.64
MOROCCAN– DUTCH RESPONDENTS				
Individual level				
Age (cont.)		0.0044 (0.0011) ***	0.0043 (0.0011) ***	0.0043 (0.0012) ***
Gender: female		0.14 (0.029) ***	0.14 (0.029) ***	0.14 (0.029) ***
Marital status: Not married/cohabitating		0.13 (0.034) ***	0.12 (0.034) ***	0.12 (0.034) ***
Educational level (cont.)		– 0.0066 (0.0079)	– 0.0057 (0.0080)	– 0.0060 (0.0080)
Financial troubles: Yes		0.25 (0.029) ***	0.24 (0.029) ***	0.24 (0.029) ***
Neighbourhood level				
Income under poverty level (% of households)			0.0048 (0.0032)	0.0049 (0.0033)
Mean Property value (euro)			0.00025 (0.00044)	0.00024 (0.00044)
Ethnic density (%)				– 0.0029 (0.015)
Model fit				
Likelihood	825.1	637.8	635.3	635.2
Change in fit of model		187.2	2.5	0.04
Degrees of freedom		5	2	1
Significance of change		<.000001	.28	.84

Note: * <.05, ** < .01, *** <.0001; cont. = continuous; a) Mean (SE) difference in log-transformed K10 sum score. Model 1 is a null random intercept model, predicting psychological distress (K10). In means-as-outcome model 2 individual socioeconomic characteristics are added to model 1. In means-as-outcome model 3 neighborhood socioeconomic characteristics are added to model 2. In means-as-outcome model 4 ethnic density is added to model 3.

DISCUSSION

In this community study among the three main ethnic minority groups and the native population in the Netherlands, no effects of ethnic density (ED) on mental health were found. We found no support for our hypothesis that a protective ED effect would occur most strongly in Turkish-Dutch, followed by Moroccan-Dutch and Surinamese Dutch, parallel with the strength of the ethnic identity of these three immigrant groups. Native Dutch respondents reported higher levels of psychological distress when they lived in neighbourhoods with a low percentage of native Dutch citizens, but this was no longer statistically significant after adjustment for individual and neighbourhood socioeconomic characteristics. These findings are in line with studies in adults in the USA showing no association of ED with depressive symptoms in blacks [19], Hispanics and Chinese [20]. Studies in adults from the UK also reported no ED effect in Black Caribbeans, Indian and Pakistani immigrants [21], no effect of ethnic composition of the neighbourhood [8], or described ED effects to be modest in size , explaining only around a single percent of variance in symptoms [7].

Our results contrast with the findings of a Dutch study which showed that ED is associated with relatively lower psychosis incidence rates in immigrants from Surinam, Turkey, and Morocco compared to Dutch natives [6]. This discrepancy might point to a distinction in the importance of neighbourhood context in psychotic disorders versus common mental disorders, for reasons not yet understood. Difference in statistical analysis might also explain the disparity in results: Veling et al. (2008) calculated incidence risk ratios of the psychotic disorder incidence rate in immigrants versus the incidence rate in native Dutch, stratified by neighbourhood ED (classified in two levels) [6]; we analyzed the association of ethnic density with psychological distress directly, stratified by ethnic group.

Strenghts and limitations

Careful interpretation of findings regarding putative effects of ED on mental health is warranted, as there are several conceptual and methodological caveats in this developing field of epidemiology [1, 22]. A strength of the present study is the use of multilevel modeling to parse out effects of the neighbourhood from effects of individual characteristics. We controlled for socioeconomic confounders at the individual level and the neighbourhood level.

Some limitations of our study merit discussion. Although extensive effort was put in reaching all sections of the population, the response was limited to 49%. As people with a low SES and high levels of health problems tend to refine from participation in surveys, this may lead to an underestimation of the impact of SES on psychological distress [23]. Another critical issue is the choice of the areas. In the present study we used neighbourhoods, which are the smallest municipal administrative units in the Netherlands. However, they are not necessarily homogeneous in socioeconomic and socio-cultural characteristics and their population size varies. This may result in an underestimation of neighbourhood differences on psychological distress. Thirdly, in the Netherlands extremely mono-ethnically segregated areas are unknown, with the exception of neighbourhoods with exclusively native Dutch residents. In the four major cities

that were included in this study the maximum percentage of same-ethnic minorities was 40% in the Surinamese-Dutch, 34% in the Turkish-Dutch and 46% in the Moroccan-Dutch citizens. Most minority persons live in neighbourhoods with less than 10% of their own ethnic group (Table 1). This limited range of ED confines the potential strength of associations between ethnic density and psychological distress. Finally, the socioeconomic indicators used in the present study might not capture sufficiently the SES on individual and neighbourhood level. Especially on the neighbourhood level eligible data were limited to mean household income and mean house value. Insofar as we adjusted insufficiently for neighbourhood SES this would lead to an underestimation of a protective ED effect.

Interpretations and implications

The absence of a protective ED effect in the present study is surprising, considering the strong identification with people of their own ethnicity and preference for contacts with people from their own ethnic group in the Turkish-Dutch and Moroccan-Dutch ethnic minorities [10,11]. An explanation may lie in the diminishing role of the neighbourhood in influencing the mental health of ethnic minorities. Whitley (2006) described how ethnic minority residents on an inner-London ward travel to religious and community facilities related to their own ethnic group outside the neighbourhood [24]. As long as people are mobile, they can 'buy in' to their non-geographical ethnic community. More general, the enormous extensions in global communications may lead to interaction with dispersed family, friends and acquaintances, while the need for a geographically local community diminishes [9]. Meanwhile, the social support, both formal and informal, that people from minority groups experience in their neighbourhood is not limited to support from people with the same ethnic background. A Dutch study showed hardly any effect of ethnic diversity on several indicators of social cohesion in the neighbourhood, when individual determinants were taken into account [25].

In so far as neighbourhood context influences mental health, the SES of the neighbourhood appears more important than the ethnic area composition, as shown in the present study and previous studies in Canada and the USA [26,27]. In a review Riva et al. (2006) identified 35 studies of associations between area SES and self-reported health [22]. In all but two studies, significant associations were observed between at least one measure of area SES and self-reported health. In the present study, a neighbourhood SES effect was observed only in native Dutch residents. The main finding from this multilevel study is that individual demographic and SES factors are far more important than neighbourhood risk factors in explaining psychological distress. As Propper (2005) summarized: 'What appears to be important for levels of common mental disorders are the observed characteristics of individuals and their households, not of place.´ [8] Therefore our results do not offer arguments for policy makers pro or contra a policy aimed at mixing different population groups in neighbourhoods. If the aim is to promote people's psychological wellbeing, a policy aimed at investment in education and work deserves priority [4].

In conclusion, in this multi-ethnic urban sample in the Netherlands, we found no associations of ED with psychological distress after adjustment for individual and neighbourhood socioeconomic

characteristics. Individual SES and, to a far lesser extent, neighbourhood SES in native Dutch residents, are predictive of psychological distress. This suggests that, rather then aiming to influence ethnic composition of the neighbourhoods, policy efforts to improve mental health at the community level should focus on these SES characteristics.

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